



United States  
Department of  
Agriculture

National Institute  
of Food and  
Agriculture



# **The Leadership Management Dashboard (LMD) User Guide:**

## **NIFA Enterprise Search 1.0**

**SYSTEM VERSION: 5.0**

**DOCUMENT VERSION: 1.0**

**RELEASE DATE: JANUARY 6, 2014**



## 1. Contact Us:

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For general questions about this application, or support for the Reporting Portal and Logging in:  
[electronic@nifa.usda.gov](mailto:electronic@nifa.usda.gov) (Tier 1 support for all users)

### Document Comments:

We value your feedback on this document. Please email your comments to [LMDsupport@nifa.usda.gov](mailto:LMDsupport@nifa.usda.gov). (Tier 2 support for Internal Staff)

Hours: M-F 7AM – 3:30PM

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**This document was created by users for users. We value your feedback! The Planning, Accountability and Reporting Staff (PARS) at NIFA has super-users that may be able to help if you encounter problems:**

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*Please remember, the data shown in this guide may not be available to the public. This guide is intended for internal use only.*

## 2. User Guide Organization:

Guides are available under the “Help” link. The Basic Navigation Guide shows you the basics of LMD. Every other guide is specific to one “Tab” in LMD, which are listed below. To download the complete Guide, please visit the Intranet site:  
<http://intranet.nifa.usda.gov/groups/OfficesUnits/OA/PA/Reporting>

Tab	User Guide
General Introduction Guide	1 - Basic Navigation in LMD – User Start Guide v1.0
Acronyms	Acronym List v1.0
Activities	Activities User Guide v1.0
Analyze	Analyze User Guide v1.0
AREERA POW	AREERA POW User Guide v1.0
Awards	Budget and Awards User Guide v1.0
Search	Enterprise Search User Guide – Faceted Search Overview v1.0
Search	Enterprise Search User Guide v1.0
Goals	Goals and Portfolios User Guide v1.0
Portfolios	Goals and Portfolios User Guide v1.0
My Snapshots	My Snapshots User Guide v1.0
State Snapshots	State Snapshots User Guide v1.0
Workload	Workload User Guide v1.0
CRIS Classification Reference	My Snapshots User Guide v1.0



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## 1 Background

This document serves as a brief introduction to the functionality available in Phase 1 (Release 1.0) of the NIFA Enterprise Search module that replaces the existing Google Search Appliance (GSA) for both the REEIS public website (<http://reeis.usda.gov>) and the Leadership Management Dashboard (LMD).

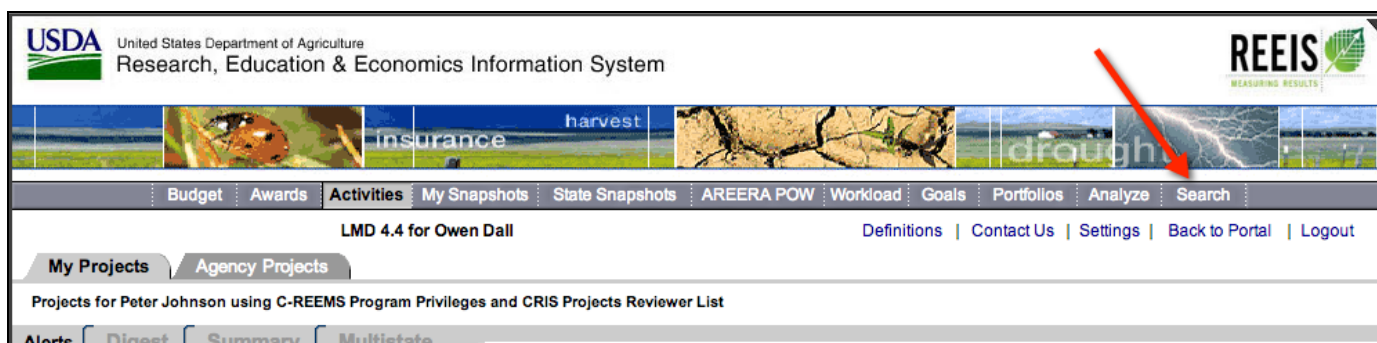
The primary major goal for Phase 1 was to leverage the existing data extraction, transformation, and loading (ETL) processes used by the GSA, and to provide added features not available using the GSA, such as saving and sharing search definitions and snapshots of search results.

In subsequent releases we will add additional data elements and additional search domains with guidance from NIFA management and stakeholders.

## 2 Brief Overview

### 2.1 How to Access the NIFA Enterprise Search

After logging into LMD, select the “Search” menu item:

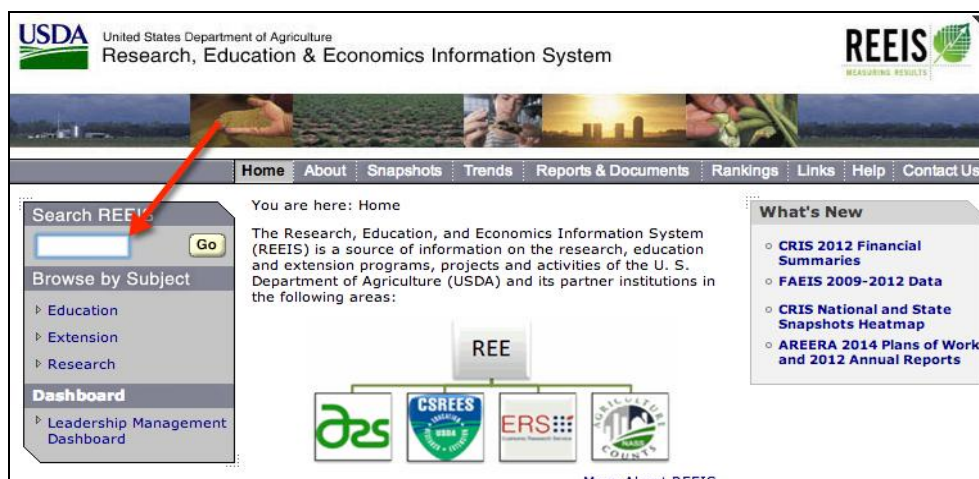


This is the view of the Search menu from the LMD 4.5 version of the menus:





From the REEIS public website use the “Search REEIS” box as before:



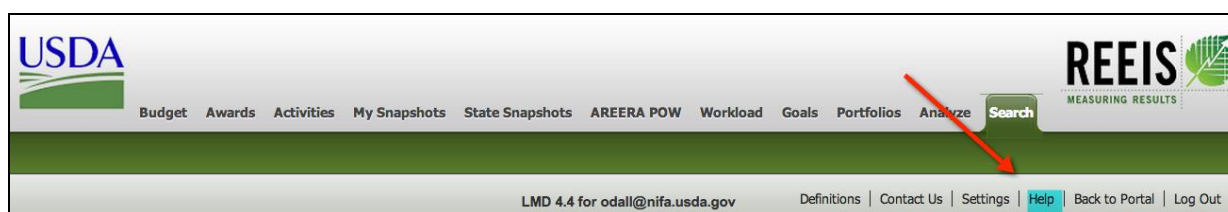
### 2.1.1 Search Domains

The following four search domains are available in Phase 1. (Additional domains are planned for subsequent releases.)

1. Project Components (Faceted)
  - Data Source: CRIS (now REEport) and C-REEMS, updated nightly.
  - Formerly the CRIS Faceted Search (searches each text field individually like the Objectives for example)
2. Project Pages
  - Data Source: CRIS (now REEport), updated nightly.
  - Formerly CRIS Projects Search (searches entire project instead of each field separately)
3. Annual Reports on Planned Programs
  - Data Source: POW (Plan of Work System), updated nightly, but major changes are seasonal.
  - Formerly POW Annual Reports on Planned Programs
4. REEIS Website
  - Data Source: <http://reeis.usda.gov>, updated nightly, but changes are infrequent.

Note that although casual users can search by entering terms and phrases easily using the Boolean “AND” and “OR” operators, the full capabilities of the Lucene query syntax is supported in each of the search domains. The next release of NIFA Enterprise Search will provide a “wizard” for creating and using more advanced queries.

OIT will soon post introductory screencasts that will be available from the “help” link:





## 2.1.2 Project Components

*This was formerly called “CRIS Faceted Search”*

The Project Components (Faceted) search is the most detailed and powerful of the four initial search domains. It includes a large number of CRIS (now REEport) project fields integrated with NIFA financial data from C-REEMS (FDC, Grant Year, Award Amount Ranges). Project Components search provides the integration of a powerful text search engine (Lucene) with the addition of filtering using pre-defined categories or “Facets” that provide a deterministic drill-through “bread crumb” trail that includes a hit count for each step through the combination of facet choices. Facets available in Phase 1 include:

1. Sponsoring Agency
2. Grantee Type
3. State
4. Grant Award Year
5. Progress Year
6. Funding Mechanism
7. Financial Data Code (FDC)
8. Keyword
9. Knowledge Area
10. Subject of Investigation
11. Field of Science
12. Text Field Type
13. Award Amount Range

The screenshot displays the NIFA Enterprise Search 1.0 Project Components (Faceted) Search interface. The top navigation bar includes links for Budget, Awards, Activities, My Snapshots, State Snapshots, AREERA POW, Workload, Goals, Portfolios, Analyze, and Search. The main search area features a search bar and a dropdown menu for "Search in" set to "Project Components (Faceted)". Below the search bar, it shows "Expected Results: 499,445 results in 53,309 projects" and buttons for "Advanced Search", "Search", and "Reset".

The interface is divided into two main sections: Facets and Results. The Facets section on the left lists categories with their respective counts:

- Sponsoring Agency:** [NIFA] USDA - NIFA (437,034), [ARS] USDA - ARS (50,123), [FS] USDA - FS (10,206), [ERS] USDA - ERS (2,082)
- Grantee Type:** [SAES] State Agricultural Experiment Station (368,260), [ARS] USDA - ARS (48,658), [IND] Other Cooperating Institution (28,453), [1890] 1890 Land Grant College or University (13,842), [FS] USDA - FS (10,206), [FRST] Forestry School (9,830)
- State:** [CA] California (41,488), [TX] Texas (23,999), [NC] North Carolina (20,195), [NY] New York (19,145), [MI] Michigan (18,953), [FL] Florida (17,060)

The Results section on the right displays "499,445 Results Found" and lists search results with details:

- Children As Change Agents For Prevention Of Childhood Obesity:** Text Type Objective, Accession Number 0227870, Score [Progress Bar]
- My Community, Our Earth (My Coe), Geographic Learning For Sustainable Development:** Text Type Objective, Accession Number 0229046, Score [Progress Bar]
- Cotton Germplasm Characterization, Evaluation, And Maintenance:** Text Type Objective, Accession Number 0408756, Score [Progress Bar]
- Cotton Germplasm Characterization, Evaluation, And Maintenance:** Text Type Progress, Accession Number 0408756, Score [Progress Bar]
- Cotton Germplasm Characterization, Evaluation, And Maintenance:** Text Type Progress, Accession Number 0408756, Score [Progress Bar]



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Each “Project Component” (Objectives, Progress, Impact, Publications) can be investigated and exported independently from the related project. Thus, one can focus a search, for example, on the Impact statements reported for the Progress Year of 2012 for Hatch projects that have the terms “biofuel” or “biomass” somewhere in one of the project fields:

The screenshot displays the NIFA Enterprise Search 1.0 web application. The top navigation bar includes the USDA logo, a menu with links like Budget, Awards, Activities, My Snapshots, State Snapshots, AREERA POW, Workload, Goals, Portfolios, Analyze, and Search, and the REEIS logo with the tagline 'MEASURING RESULTS'. Below the navigation bar, a status bar shows 'LMD 4.4 for odall@nifa.usda.gov' and links for Definitions, Contact Us, Settings, Help, Back to Portal, and Log Out.

The main section is titled 'Project Components (Faceted) Search'. It features a search bar with the text 'biofuels OR biomass' and a 'Saved Searches' button. Below the search bar, it shows 'Expected Results: 1,455 results in 692 projects' and an 'Advanced Search' button. The 'Facets' section on the left includes filters for Sponsoring Agency (NIFA USDA - NIFA, 1,455), Grantee Type (SAES State Agricultural Experiment Station, 1,455), State (California, Texas, Michigan, Illinois, South Dakota, Oklahoma), Progress Year (2012, 1,455), and Funding Mechanism.

The search results section, titled '1,455 Results Found', displays a list of results. A red arrow points to the first result, 'Regional Biomass Processing Centers For Sustainable Biofuels And Animal Feeds'. The result details include the text type 'Publication', a description of the project, the accession number '0216816', and a score bar. The keyword list includes 'afex, ammonia fiber expansion, biofuel, biomass, biomass processing centers, cellulosic biomass, ethanol, switchgrass'.

Currently Sponsoring Agencies included in this domain are NIFA, ARS, ERS, and FS (Forest Service). (In the next release it has been recommended to add State Partner sponsored projects as well.)

Clicking on a hyperlinked title (see above screen shot) in the search results will launch a view of the entire project detail page.



## 2.1.3 Project Pages

*This was formerly called “CRIS Projects”*

This search domain is built by indexing the each entire project detail pages (HTML) for all available CRIS (now REEport) projects. The search interface appears as follows:

The screenshot displays the NIFA Enterprise Search 1.0 Project Pages Search interface. At the top, there is a navigation bar with the USDA logo on the left and the REEIS logo on the right. Below the navigation bar, there is a search bar with the text "bee colony collapse" and buttons for "Search" and "Reset". A red arrow points to the first search result, which is titled "GENOMICS, FUNCTIONAL ROLES AND COMMUNITY DIVERSITY OF THE SYMBIOTIC GUT MICROBIOTAE OF HONEY BEES AND BUMBLE BEES - Agricultural Research Service". Below this title, there is a score bar. Other search results are listed below, including "Unraveling Impacts on Honey Bee Health of Agricultural and In-Hive Pesticides - PENNSYLVANIA STATE UNIVERSITY", "Sustainable Solutions to Problems Affecting Bee Health - UNIVERSITY OF MAINE", "Sustainable solutions to problems affecting honey bee health - MISSISSIPPI STATE UNIV", "Genome Informatics for Agriculturally Important Hymenoptera Species and Their Pathogens - GEORGETOWN UNIV", "Molecular interactions between insects and pathogens/parasites for disease and pest control - PENNSYLVANIA STATE UNIVERSITY", and "IMPROVING HONEY BEE HEALTH, SURVIVORSHIP, AND POLLINATION AVAILABILITY - Agricultural Research Service". Each result includes a brief description and a score bar.

In contrast to the Project Faceted Search, which indexes project text components separately, each project summary is indexed as one document, without facets.

Clicking on a hyperlinked title (see above screen shot) in the search results will launch a view of the entire project detail page.



## 2.1.4 Annual Reports on Planned Programs

*This was formerly called “POW Annual Reports on Planned Programs”*

The search interface appears as follows:

The screenshot displays the NIFA Enterprise Search 1.0 web interface. At the top, there is a navigation bar with the USDA logo on the left and the REEIS logo on the right. Below the logos is a menu with items: Budget, Awards, Activities, My Snapshots, State Snapshots, AREERA POW, Workload, Goals, Portfolios, Analyze, and Search. A user login bar shows 'LMD 4.4 for odall@nifa.usda.gov' and links for Definitions, Contact Us, Settings, Help, Back to Portal, and Log Out.

The main content area is titled 'Annual Reports on Planned Programs Search'. It features a search bar with the text 'Integrated pest management' AND 2011. Below the search bar, it indicates '375 Results Found'. A red arrow points to the first search result, which is a hyperlinked title: '4381 2011 Mississippi State University Combined Research and Extension Annual Report of Accomplishments and Results Integrated Pest Management'. The result snippet includes details about the report, the year (2011), and the program name (Integrated Pest Management). Below the snippet is a 'Score' bar.

Other search results are visible below, including '3405 2010 Mississippi State University Combined Research and Extension Annual Report of Accomplishments and Results Integrated Pest Management', '3552 2010 Oklahoma State University Combined Research and Extension Annual Report of Accomplishments and Results Global Food Security and Hunger Integrated Pest Management', '3415 2010 Montana State University Research Annual Report of Accomplishments and Results Global Food Security and Hunger Integrated Pest Management', and '4397 2011 Montana State University Research Annual Report of Accomplishments and Results Global Food Security and Hunger Integrated Pest Management'.

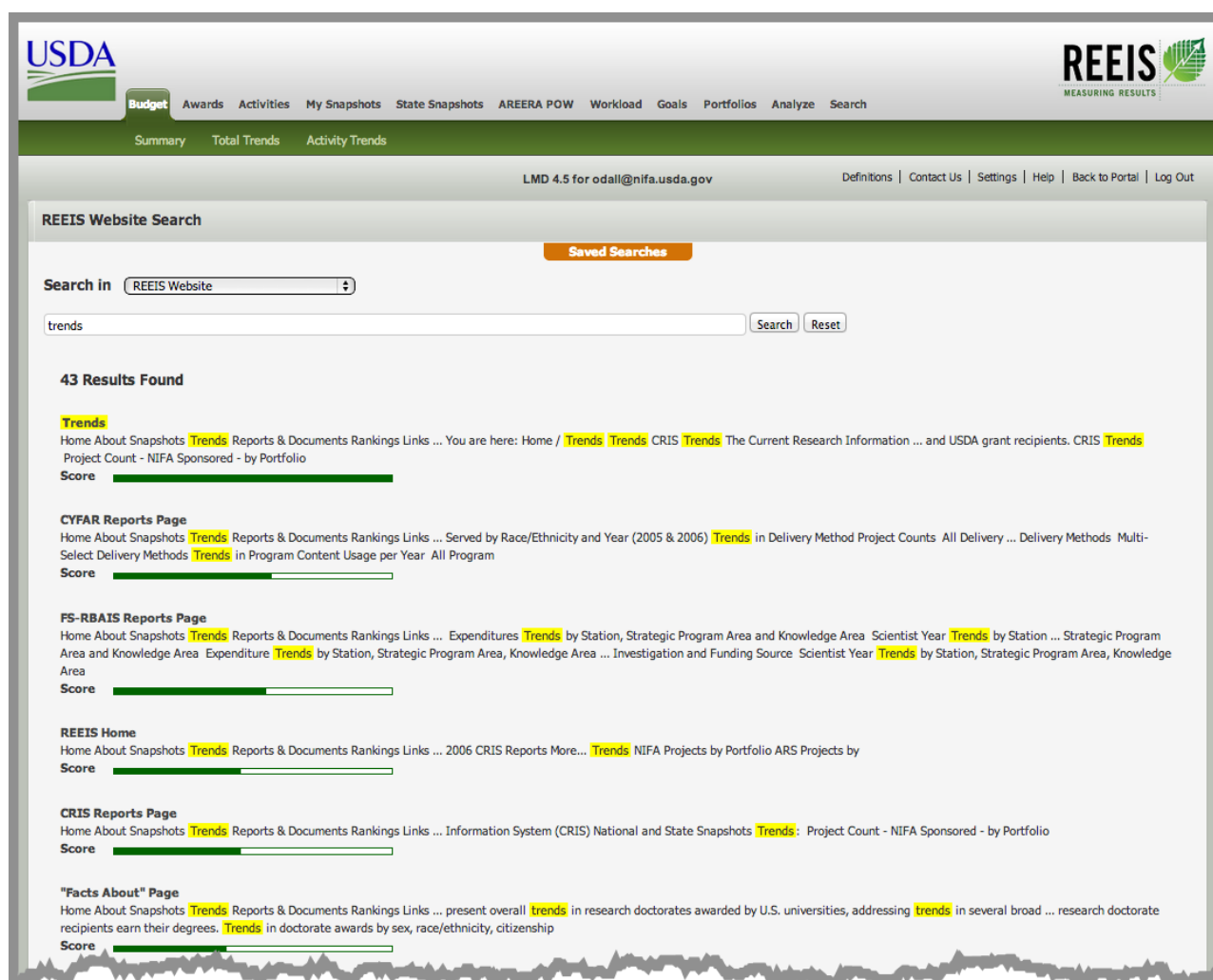
Clicking on a hyperlinked title (see above screen shot) in the search results will launch a view of the entire Annual Report of Accomplishments for the Planned Program.



## 2.1.5 REEIS Website

*This was formerly called “REEIS Portal”*

The search interface appears as follows:





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The screenshot displays the NIFA Enterprise Search 1.0 User Guide interface. At the top, the USDA logo is on the left, and the REEIS logo (Measuring Results) is on the right. Below the logos is a navigation bar with links: Budget, Awards, Activities, My Snapshots, State Snapshots, AREERA POW, Workload, Goals, Portfolios, Analyze, and Search. A secondary navigation bar shows Summary, Total Trends, and Activity Trends. The main header area includes the text 'LMD 4.5 for odall@nifa.usda.gov' and links for Definitions, Contact Us, Settings, Help, Back to Portal, and Log Out.

The main content area is titled 'REEIS Website Search'. It features a search bar with the text 'trends' and buttons for 'Search' and 'Reset'. Above the search bar is a 'Saved Searches' button. Below the search bar, the results are displayed under the heading '43 Results Found'. A red arrow points to the first result, which is titled 'Trends'. The result description includes: 'Home About Snapshots Trends Reports & Documents Rankings Links ... You are here: Home / Trends Trends CRIS Trends The Current Research Information ... and USDA grant recipients. CRIS Trends Project Count - NIFA Sponsored - by Portfolio'. Below the description is a 'Score' bar.

Other results visible include:

- CYFAR Reports Page**: Home About Snapshots Trends Reports & Documents Rankings Links ... Served by Race/Ethnicity and Year (2005 & 2006) Trends in Delivery Method Project Counts All Delivery ... Delivery Methods Multi-Select Delivery Methods Trends in Program Content Usage per Year All Program
- FS-RBAIS Reports Page**: Home About Snapshots Trends Reports & Documents Rankings Links ... Expenditures Trends by Station, Strategic Program Area and Knowledge Area Scientist Year Trends by Station ... Strategic Program Area and Knowledge Area Expenditure Trends by Station, Strategic Program Area, Knowledge Area ... Investigation and Funding Source Scientist Year Trends by Station, Strategic Program Area, Knowledge Area
- REEIS Home**: Home About Snapshots Trends Reports & Documents Rankings Links ... 2006 CRIS Reports More... Trends NIFA Projects by Portfolio ARS Projects by
- CRIS Reports Page**: Home About Snapshots Trends Reports & Documents Rankings Links ... Information System (CRIS) National and State Snapshots Trends: Project Count - NIFA Sponsored - by Portfolio
- "Facts About" Page**: Home About Snapshots Trends Reports & Documents Rankings Links ... present overall trends in research doctorates awarded by U.S. universities, addressing trends in several broad ... research doctorate recipients earn their degrees. Trends in doctorate awards by sex, race/ethnicity, citizenship

Clicking on a hyperlinked title (see above screen shot) in the search results will launch a view of the entire REEIS Website page found in the search results.



## 2.2 Saving and Exporting Search Results

### 2.2.1 Definitions

**Saved Search.** A “Saved Search” is a saved search definition with a user-specified name (title), which includes the text specified as well as the facets selected during the search. However, every time the search is loaded, fresh results are returned according to the latest data/index.

**Saved Result.** A “Saved Result” is a snapshot in time of the data that are in the data/index at the time of query execution. Each “Saved Search” can have many related snapshots.

### 2.2.2 Saving a Search Definition

The screenshot displays the NIFA Enterprise Search interface. At the top, the USDA logo is on the left, and the REEIS logo is on the right. Below the logos is a navigation bar with links: Budget, Awards, Activities, My Snapshots, State Snapshots, AREERA POW, Workload, Goals, Portfolios, Analyze, and Search. The user is logged in as LMD 4.5 for oda@nifa.usda.gov. The search results are for the query 'biofuels OR bio fuels'. The search results are displayed in a table with 5 results found. The results are filtered by facets: Sponsoring Agency (NIFA), Grantee Type (Other Cooperating Institution), State (Texas), and Grant Award Year (2013). A red arrow points to the 'Save New' button in the top right corner of the search results area.



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USDA

Budget Awards Activities My Snapshots State Snapshots AREERA POW Workload Goals Portfolios Analyze Search

LMD 4.5 for odall@nifa.usda.gov

Definitions | Contact Us | Settings | Help | Back to Portal | Log Out

Project Components (Faceted) Search

Save this search as: biofuels TX 2013 Save

☒ Save Results Now

Search in: Project Components (Faceted)

biofuels OR "bio fuels"

Expected Results: 5 results in 3 projects

Advanced Search Search Reset

Facets: > [NIFA] USDA - NIFA X > [TX] Texas X > 2013 X

Note that also selecting the “Save Results Now” option will create a snapshot of data that exists at that time using that saved search definition.

Clicking on the “Saved Searches” button will display the current list of saved searches in the LMD repository:

USDA

Budget Awards Activities My Snapshots State Snapshots AREERA POW Workload Goals Portfolios Analyze Search

Summary Total Trends Activity Trends

LMD 4.5 for odall@nifa.usda.gov

Definitions | Contact Us | Settings | Help | Back to Portal | Log Out

Project Components (Faceted) Search

Save New Export

Saved Searches List

Date	Name	Description	Created By	
27 Dec 16:52	biofuels TX 2013	Simple Query > "biofuels OR \"bio fuels\"" Selected Facets > Sponsoring Agency: ["NIFA"], State: ["TX"], Grant Award Year: ["2013"]	Owen Dall	Load Search Save Results Results Panel Delete Search
27 Dec 15:19	Joe Bee Colony Collapse	Simple Query > "bee colony collapse" Selected Facets > Grant Award Year: ["2013"]	Joseph Barbano	Load Search Results Panel
27 Dec 14:45	Erosion Testing	Simple Query > "Erosion"	Maryam Plavinskaya	Load Search Results Panel
27 Dec 14:45	Erosion Testing	Simple Query > "Erosion"	Maryam Plavinskaya	Load Search Results Panel
27 Dec 13:48	Unnamed	Simple Query > "climate control" Selected Facets > Grantee Type: ["SAES"], Progress Year: ["2012"], Field of Science: ["FOS3010"], Text Field Type: ["PROGRESS"]	Maryam Plavinskaya	Load Search Results Panel
27 Dec 13:16	strawberry	Simple Query > "strawberry" Selected Facets > Knowledge Area: ["KA213"]	Michelle Mascarenhas	Load Search Results Panel
27 Dec 12:20	Bovine: ARS Maryland	Simple Query > "bovine" Selected Facets > Grantee Type: ["ARS"], State: ["MD"]	Jack Compton	Load Search Results Panel

Displaying all 7 searches

Close Panel

Clicking on “Results Panel” related to a Saved Search will bring up the summary of Saved Results for this query (if it exists) because we chose that option while saving the search definition. Note that only the first item in the Saved Searches List has the options of “Save Results” and “Delete Search” as it is the only saved search owned by me (Owen Dall). You can only delete and modify searches that you have created. Clicking on the “Results Panel” will display the following.

Clicking on “Show Results” will display the following:



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USDA

Budget Awards Activities My Snapshots State Snapshots AREERA POW Workload Goals Portfolios Analyze **Search**

REEIS  
MEASURING RESULTS

LMD 4.5 for odall@nifa.usda.gov

Definitions | Contact Us | Settings | Help | Back to Portal | Log Out

Saved Results at 27 Dec 16:52 from Saved Search "biofuels TX 2013".

Close Save New Export

Saved Searches

5 Results Found Toggle All Fields

Genetic Mapping Of Drought Response, Nutrient Metabolism, And Other Potentially Adaptive Traits In The Bioenergy Crop Switchgrass  
Text Type Objective  
Accession Number 0226120  
Score 100 [more like this objective...](#)

Genetic Mapping Of Drought Response, Nutrient Metabolism, And Other Potentially Adaptive Traits In The Bioenergy Crop Switchgrass  
Text Type Progress  
Accession Number 0226120  
Score 100 [more like this progress...](#)

Genetic Mapping Of Drought Response, Nutrient Metabolism, And Other Potentially Adaptive Traits In The Bioenergy Crop Switchgrass  
Text Type Progress  
Accession Number 0226120  
Score 100 [more like this progress...](#)

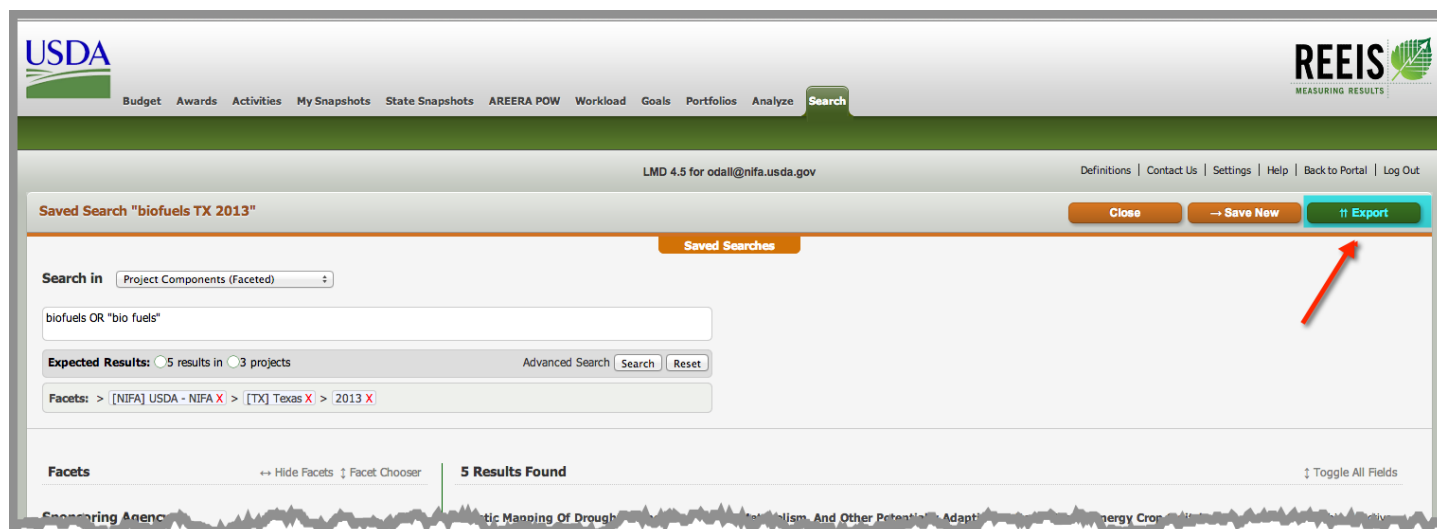
Building Expertise On Energy Sustainability (Bees) : An Integrative Model To Increase Research And Education In Renewable Energy Systems  
Text Type Progress  
Accession Number 0222554  
Score 100 [more like this progress...](#)

A Water And Risk Management Tool For Sustainable Production Of Bioenergy Feedstocks  
Text Type Objective  
Accession Number 1001289  
Score 100 [more like this objective...](#)

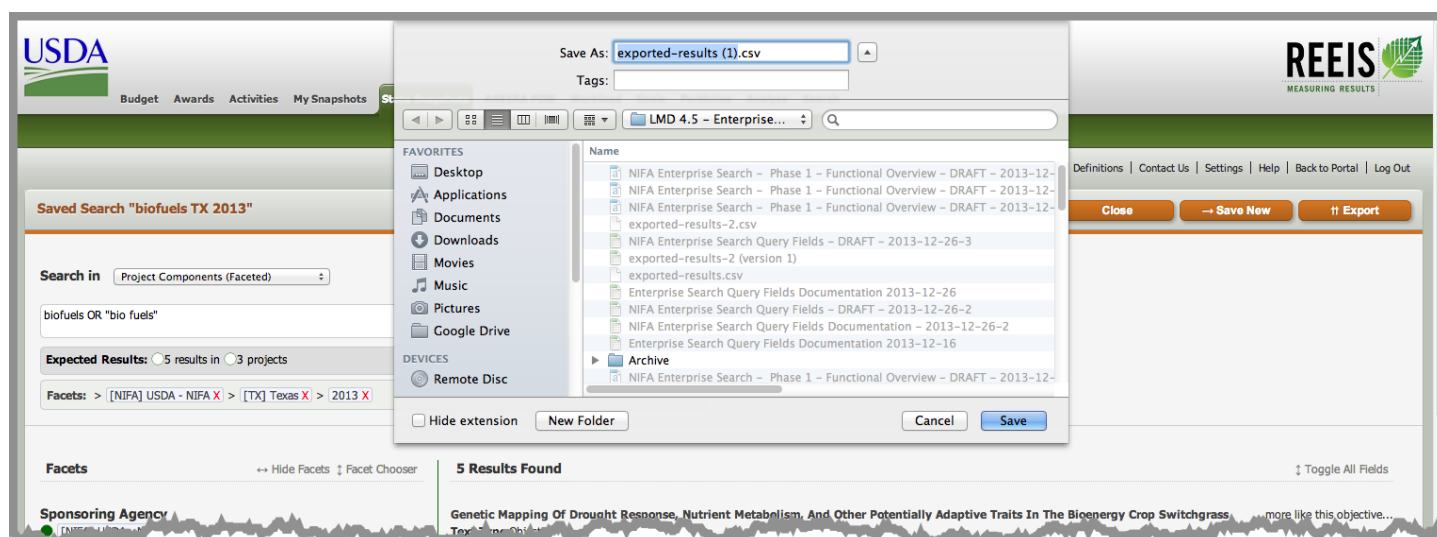


## 2.2.3 Exporting Results

Clicking the “Export” button will initiate and export of all of the results currently active:



After clicking, you will be prompted to provide a name and location for the text file (in comma separated values) format:



Note that there will be one row for each of the “Text Field Type” (project components) that met the criteria for the search:



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The screenshot displays the NIFA Enterprise Search 1.0 interface. On the left, a sidebar contains various filters: Fellowship (3), Sustainable Bioenergy Research (1), Higher Ed Hispanic Serving Institutions (1), Keyword (transportation fuel (3), switchgrass (3), sustainable (3), rainfall (3), qtl (3), panicum (3)), Knowledge Area (KA203 Plant Biological Efficiency And Abiotic Stresses ... (4), KA202 Plant Genetic Resources And Biodiversity (3), KA201 Plant Genome, Genetics, And Genetic Mechanisms (3), KA102 Soil, Plant, Water, Nutrient Relationships (3), KA605 Natural Resource And Environmental Economics (1), KA205 Plant Production Management Systems (1)), Subject of Investigation (SOI629 Perennial Grasses, Other (4), SOI6199 Economy, General/Other (1), SOI2099 Sugar Crops, General/Other (1), SOI1639 Annual Grasses, Other (1), SOI0430 Climate (1)), Field of Science (FOS1080 Genetics (Includes Breeding) (3), FOS1020 Physiology (3), FOS2020 Engineering (1), FOS1060 Biology (Whole Systems) (1)), Text Field Type (PROGRESS (3), OBJECTIVE (2)), and Award Amount Range (\$50K - \$100K (4), \$150K - \$200K (3), \$1M - \$2M (1), \$300K - \$350K (1)). A red arrow points to the 'Text Field Type' filter, specifically highlighting the 'PROGRESS' and 'OBJECTIVE' options. The main content area shows two search results. The first result is 'A Water And Risk Management Tool For Sustainable Production Of Bioenergy Feedstocks' with a 'Text Type Objective' and an 'Accession Number 1001289'. The second result is 'Building Expertise On Energy Sustainability (Bees) : An Integrative Model To Increase Research And Education In Renewable Energy Systems' with a 'Text Type Progress' and an 'Accession Number 0222554'. Both results include a 'Score' bar and a 'Keyword' field.

In this case there are three rows of PROGRESS and two rows of OBJECTIVE among three projects that met the search criterion:

The screenshot displays the NIFA Enterprise Search 1.0 interface for a saved search. At the top, it says 'LMD 4.5 for odall@nifa.usda.gov'. Below that, a header bar reads 'Saved Search "biofuels TX 2013"'. A 'Saved Searches' button is visible. The 'Search in' dropdown is set to 'Project Components (Faceted)'. The search query is 'biofuels OR "bio fuels"'. Below the query, a status bar indicates 'Expected Results: 5 results in 3 projects'. To the right of this bar are buttons for 'Advanced Search', 'Search', and 'Reset'. At the bottom, a 'Facets' section shows filters for '[NIFA] USDA - NIFA X', '[TX] Item X', and '2013 X'. A red arrow points to the search query input field.



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The following is a sample screen shot of the exported results in Excel:

	A	B	C	D	E	F	G	H	I	J	K	L
	from_date	to_date	progress_year	project_text	text_type	accession_no	sponsoring_agency	sponsoring_agency_n	grantee_project_id	title	project_dir	project_dir_n
1	9/1/11	8/31/13		Biomass and biofuels are already becoming major sources of domestically produced electricity and transportation fuels and their role is likely to increase in the future. During the first year of the fellowship (2011-2012), I also developed a genetic research program on understanding drought stress tolerance in switchgrass ( <i>Panicum virgatum</i> ). I conducted genetic mapping of morphological traits and drought response in F1 outbred mapping population made between a cross of two southern cultivars (Kanlow and Alamo) of switchgrass. I also completed the creation of a new hybrid genetic mapping population between cultivars from the upper Great Plains and Texas. This mapping population will now be used to understand differences in drought tolerance of cultivars from the different regions of the United States. To assess differential response of cultivars to drought, I conducted series of experiments on the physiological response by controlling soil moisture under field conditions. I have also established a large supply of southern switchgrass germplasm through extensive collections across the state of Texas and conducted population genetic analysis with the germplasm. In addition, I developed microsatellite genetic markers for a closely related species, <i>Panicum hallii</i> . <i>P. hallii</i> will serve as an excellent genetic model for future switchgrass and bioenergy research. Finally, I conducted pilot studies on the utility of biosolid-based fertilizer under greenhouse conditions. Unfortunately, it appears that it will be difficult to achieve the biosafety clearance to perform larger biosolid experiment at the University of Texas. Teaching: I have developed and implemented lecture and laboratory curriculum for the Biology of Biofuels Freshman Research Initiative Course at the University of Texas at Austin. Events: To disseminate my findings to the scientific community I have given five presentations (two invited) over the past year at the following locations and conferences: ASA-CSSA-SSSA International Annual Meeting in San Antonio, TX; Plant and Animal Genomes Conference in San Diego, CA; University of California, Davis in the Department of Viticulture and Enology; International Evolution Society Conference in Ottawa, Canada; and the USDA NIFA Fellows Meeting in Washington, D.C. Products: Texas switchgrass germplasm collection: Contains live plant material collected from 40 locations across the state of Texas. Four-way outbred hybrid mapping population: This mapping population is the product of a cross between the following four cultivars: Summer (Nebraska), Dakota (North Dakota), Alamo (South Texas), Austin (Central Texas). The population will be genotyped by Illumina sequencing and genetic map will be completed by the summer of 2013. PARTICIPANTS: Individuals: David Lowry-Project director as a USDA NIFA AFRI postdoctoral fellow. Thomas Juenger-Postdoctoral advisor and Associate Professor at University of Texas at Austin. Samuel Taylor-Collaborator on the genetic mapping in the Kanlow x Alamo population and physiology of drought tolerance across switchgrass cultivars. Currently a professor at Bowdoin College, ME. Mike Aspinwall-Collaborator on physiology of drought tolerance across switchgrass cultivars. Currently a research scientist at the University of Western Sydney, Australia. Jacob Helling-Mentored undergraduate student that worked on the Texas Germplasm Collections. Ashley Amus-Mentored undergraduate student that worked on the project genetic mapping in the Kanlow x Alamo population and the Texas Germplasm Collections. Currently, a graduate student at University of Texas, Arlington. Partner organizations: USDA-ARS Grassland Soil and Water Research Laboratory, Temple, TX. Ladybird Johnson Wildflower Center, Austin, TX. Hornsby Bend Biosolid Management Plant, Austin, TX.	OBJECTIVE	226120	NIFA	USDA - NIFA	TEXW-2010-05196	Genetic Map	Lowry, D. B.	Lowry
3	9/1/11	8/31/12	2012	Target Audience: The target audience for this research is switchgrass plant breeders and academic plant biologists. Outreach has been made through teaching and mentoring of undergraduate students through the Freshman Research Initiative (FRI) Biology of Biofuels program at the University of Texas at Austin. The results of the research have been communicated to stakeholders through presentations at the Switchgrass II meeting in Madison, WI and to the land grant Colorado State University. Outreach to minority groups in science has been made through participation of Dr. Lowry in the Annual Society for Advancement of Chicanos and Native Americans in Science National Conference in San Antonio, TX in 2013. Outreach to the general public is currently underway through the development of an exhibit on switchgrass biology at the Texas Natural History Museum. The exhibit should be completed in 2014. Changes/Problems: Objective 3, as originally proposed, was significantly hampered by the difficulty of achieving the biosafety clearance to perform the biosolid experiments at the University of Texas. In addition, the development of a suitable genetic mapping population (Objective 2) for studying the genetics of nutrient use efficiency differences between varieties of switchgrass was delayed by initial difficulties of developing successful crossing methodologies. As a result, I focused my efforts on better understanding the link between drought physiological response and gene expression in switchgrass, which relates to Objective 1. There were two major drydown experiments that I performed or participated in relation to this revised objective. What opportunities for training and professional development has the project provided? David Lowry-Postdoctoral Fellow supported by this fellowship Training activities: Dr. Lowry received extensive training quantitative genetics, plant physiology, analysis of gene expression data and large genomic data sets throughout the course of his fellowship. The primary training the Lowry received was from his faculty advisor, Dr. Thomas Juenger, at the University of Texas at Austin. Professional Development: During	PROGRESS	226120	NIFA	USDA - NIFA	TEXW-2010-05196	Genetic Map	Lowry, D. B.	Lowry



## 2.3 Using Query Fields

This functionality is only available within the “Project Components (Faceted)” search domain.

### 2.3.1 Available Query Fields

The following fields are searched by default when you enter a text search term or phrase such as “biofuels OR biomass”:

FIELD NAME	DESCRIPTION	COMMENTS
from_date:	Progress Date From	
to_date:	Progress Date To	
progress_year:	Progress Year	
project_text:	Project Text	<i>Search only within the Objective, Progress, Impact or Publication text</i>
text_type:	Text Type	<i>"OBJECTIVE", "PROGRESS", "IMPACT", "PUBLICATION" (in caps)</i>
accession_no:	Accession Number	<i>*** Include the leading zero, if applicable ***</i>
sponsoring_agency_code:	Sponsoring Agency Code	<i>"NIFA", "ARS", "ERS", "FS"</i>
sponsoring_agency_name:	Sponsoring Agency Name	
grantee_project_identifier:	Grantee Project Identifier	
title:	Project Title	
project_director_full_name:	Project Director (Full Name)	
project_director_last_name:	Project Director (Last Name)	
project_director_email:	Project Director Email	
project_type_code:	Project Type Code	<i>Project type code as per CRIS ("G", "F", etc.)</i>
project_type_name:	Project Type Name	<i>Project type name as per CRIS ("SPECIAL GRANT", "AFRI COMPETITIVE GRANT", etc.)</i>
status_code:	Status Code	<i>*** Not yet implemented ***</i>
status_name:	Status Name	<i>*** Not yet implemented ***</i>
research_percent:	Research Percent	<i>*** Not yet implemented ***</i>
education_percent:	Education Percent	<i>*** Not yet implemented ***</i>
extension_percent:	Extension Percent	<i>*** Not yet implemented ***</i>
forestry_percent:	Forestry Percent	<i>*** Not yet implemented ***</i>
research_basic_percent:	Research Basic Percent	
research_applied_percent:	Research Applied Percent	
research_developmental_percent:	Research Developmental Percent	
fdc:	FDC	
project_type:	Project Type	<i>"FORMULA" or "NON-FORMULA"</i>
created_at:	Text Created At	<i>Date Field</i>
updated_at:	Text Updated At	<i>Date Field</i>
grantee.name:	Grantee Name	



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FIELD NAME	DESCRIPTION	COMMENTS
grantee.nifa_code:	Grantee NIFA Code	*** Not yet implemented ***
grantee.nifa_legacy_station_code:	Grantee NIFA legacy Station Code	*** "Division/Station" (DS) Code from CRIS **
grantee.duns:	Grantee Duns	
grantee.type_code:	Grantee Type Code	For example, "SAES"
grantee.type_name:	Grantee Type Name	
grantee.institution_rollup_name:	Grantee Institution Rollup Name	For example, "University of Maryland"
grantee.postal_code:	Grantee Postal Code	ZIP Code
grantee.state_code:	Grantee State Code	
grantee.state_name:	Grantee State Name	
grantee.region_code:	Grantee Region Code	
grantee.region_name:	Grantee Region Name	
grantee.country_code:	Grantee Country Code	*** Not yet implemented ***
grantee.country_name:	Grantee Country Name	*** Not yet implemented ***
grantee.address_line_1:	Grantee Address Line 1	
grantee.address_line_2:	Grantee Address Line 2	
grantee.address_line_3:	Grantee Address Line 3	
grantee.city_name:	Grantee City Name	In all CAPS
grantee.county_name:	Grantee County Name	In all CAPS
grantee.nifa_partner_flag:	Grantee NIFA Partner Flag	"Y" means the grantee is a NIFA Partner
grantee.type_code_with_type_name:	Grantee Type Code With Type Name	
awards.grant_year_id:	Awards Grant Year ID	This is equivalent to the numeric Fiscal Year, e.g., 2002, 2003, etc.
awards.award_amount:	Awards Award Amount	
awards.created_at:	Awards Created At	Date Field
awards.updated_at:	Awards Updated At	Date Field
kas:	Knowledge Area	List of Knowledge Areas associated with the project
sois:	Subject Of Investigation	List of Subjects of Investigation associated with the project
foss:	Field Of Science	List of Fields of Science associated with the project
keywords:	Keywords	



## 2.3.2 Limiting a Search By Using A Specific Query Field in Project Components (Faceted) Search

You may wish to limit the fields that are searched by the text you enter. For example, you may wish to search only the “accession\_no” field when you enter text for a project accession number. Enter the field name, followed by a colon, followed by the value to be searched:

The screenshot shows the 'Project Components (Faceted) Search' interface. The search bar contains the text 'accession\_no:0208890'. A red arrow points to the search bar. The 'Expected Results' section shows '16 results in 1 project'. The 'Facets' section on the left lists 'Sponsoring Agency' (NIFA), 'Grantee Type' (SAES), 'State' (TX), and 'Grant Award Year' (2016). The '16 Results Found' section on the right shows three results, all titled 'Biosecurity In The Agribusiness And Food Supply Chain', with 'Text Type' of 'Objective', 'Progress', and 'Progress' respectively. Each result has an 'Accession Number 0208890' and a 'Score' bar.

You can include any number of fields using the Boolean “AND” and “OR” operators. For example, what if you wanted to limit your search the text “biofuels” to only publications?

The screenshot shows the 'Project Components (Faceted) Search' interface. The search bar contains the text '(text\_type:PUBLICATION) AND (project\_text:biofuels)'. The 'Expected Results' section shows '668 results in 484 projects'. The 'Facets' section on the left is the same as in the previous screenshot. The '16 Results Found' section on the right is not visible in this screenshot.



### 2.3.3 Advanced Search Capabilities

(The following text was abstracted and modified from the official Apache Lucene documentation. Apache Lucene is the underlying indexing engine used by NIFA Enterprise Search.)

#### Terms

A query is broken up into terms and operators. There are two types of terms: **Single Terms** and **Phrases**. A Single Term is a single word such as "test" or "hello". A Phrase is a group of words surrounded by double quotes such as "hello dolly".

Multiple terms can be combined together with Boolean operators to form a more complex query (see below).

#### Boolean Operators

Boolean operators allow terms to be combined through logic operators. Lucene supports AND, "+", OR, NOT and "-" as Boolean operators. (Note: Boolean operators must be ALL CAPS).

#### OR

NIFA Enterprise Search uses the AND operator as the default., which means entering two terms next to each other assumes the AND operator.

To search for documents that contain either "jakarta apache" or just "jakarta" use the query:

```
"jakarta apache" OR jakarta
```

#### AND

The AND operator matches documents where both terms exist anywhere in the text of a single document. This is equivalent to an intersection using sets. To search for documents that contain "jakarta apache" and "Apache Lucene" use the query:

```
"jakarta apache" AND "Apache Lucene"
```

#### NOT

The NOT operator excludes documents that contain the term after NOT. This is equivalent to a difference using sets. The symbol ! can be used in place of the word NOT. To search for documents that contain "jakarta apache" but not "Apache Lucene" use the query:

```
"jakarta apache" NOT "Apache Lucene"
```

Note: The NOT operator cannot be used with just one term. For example, the following search will return no results:

```
NOT "jakarta apache"
```



### Grouping

Lucene supports using parentheses to group clauses to form sub queries. This can be very useful if you want to control the Boolean logic for a query. To search for either "jakarta" or "apache" and "website" use the query:

```
(jakarta OR apache) AND website
```

This eliminates any confusion to makes sure that the term website must exist in the results, and either term, jakarta or apache, may exist.

### Wildcard Searches

Enterprise Search supports single and multiple character wildcard searches within single terms (not within phrase queries). To perform a single character wildcard search use the "?" symbol. To perform a multiple character wildcard search use the "\*" symbol.

The single character wildcard search looks for terms that match the single character replaced. For example, to search for "text" or "test" you can use the search:

```
te?t
```

Multiple character wildcard searches looks for 0 or more characters. For example, to search for test, tests or tester, you can use the search:

```
test*
```

You can also use the wildcard searches in the middle of a term.

```
te*t
```

Note: You cannot use a \* or ? symbol as the first character of a search.

### Proximity

ES supports finding words are a within a specific distance away. To do a proximity search use the tilde, "~", symbol at the end of a Phrase. For example to search for "apache" and "jakarta" within 10 words of each other in a document use the search:

```
"jakarta apache"~10
```

### Fields

When performing a search you can either specify a field, or use the default fields as outlined above. You can search any field by typing the field name followed by a colon ":" and then the term you are looking for. If you want to find the project entitled "Do it right" which contains the text "don't go this way", you can enter:

```
title:"Do it right" AND way
```

Since text is the default field, the field indicator is not required.



Note: The field is only valid for the term that it directly precedes, so the query

```
title:Do it right
```

will only find "Do" in the title field. It will find "it" and "right" in the default fields. Note: To search a complete title phrase, see the **Field Grouping** instructions below to make the phrase into a single term.

### Range Searches

Range Queries allow one to match documents whose field(s) values are between the lower and upper bound specified by the Range Query. Range Queries can be inclusive or exclusive of the upper and lower bounds. Sorting is done lexicographically.

```
to_date:[20020101 TO 20030101]
```

This will find documents whose to\_date field has values between 20020101 and 20030101, inclusive. To exclude the two defined dates from the list, use curly brackets (braces) instead:

```
to_date:{20020101 TO 20030101}
```

Note that Range Queries are not reserved for date fields. You could also use range queries with non-date fields:

```
title:{Aida TO Carmen}
```

This will find all documents whose titles are between Aida and Carmen, but not including Aida and Carmen.

Remember, inclusive range queries are denoted by square brackets. Exclusive range queries are denoted by curly brackets, also known as "braces."

### Boosting a Term

Lucene provides the relevance level of matching documents based on the terms found. To boost a term use the caret, "^", symbol with a boost factor (a number) at the end of the term you are searching. The higher the boost factor, the more relevant the term will be. Boosting allows you to control the relevance of a document by boosting its term. For example, if you are searching for jakarta apache and you want the term "jakarta" to be more relevant boost it using the ^ symbol along with the boost factor next to the term. You would type:

```
jakarta^4 apache
```

This will make documents with the term jakarta appear more relevant. You can also boost Phrase Terms as in the example:

```
"jakarta apache"^4 "Apache Lucene"
```

By default, the boost factor is 1. Although the boost factor must be positive, it can be less than 1 (e.g. 0.2).

### Field Grouping

Lucene supports using parentheses to group multiple clauses to a single field. To search for a title that contains both the word "return" and the phrase "pink panther" use the query:

```
title:(+return +"pink panther")
```